Quality approach in oil palm selection and seed production by using ID Checking test with 12 SSR markers

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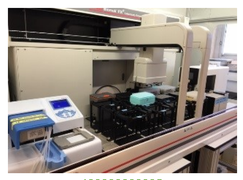
Errors during breeding process have already been evidenced (Corley, 2005). Since 2009, CIRAD and PalmElit, as part of a quality approach, are routinely using a fingerprinting method to detect illegitimate individuals within the plant material in selection and seed production processes.

Materials and methods

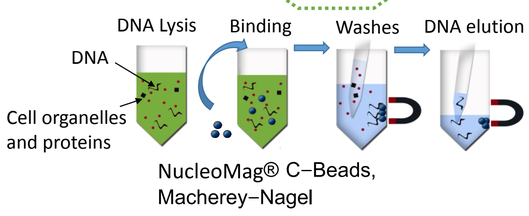
- « Sample ID » follows all the processes
- Automates used to minimize errors
- Amplification of 12 SSR in 2 multiplexe PCR

Leaf sampling and grinding

Biomek FX (Beckman)

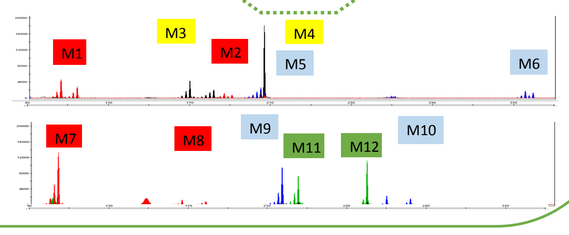


Automated DNA extraction



ABI 3500xL, Applied, (Life Technology)

SSR Amplification and Genotyping

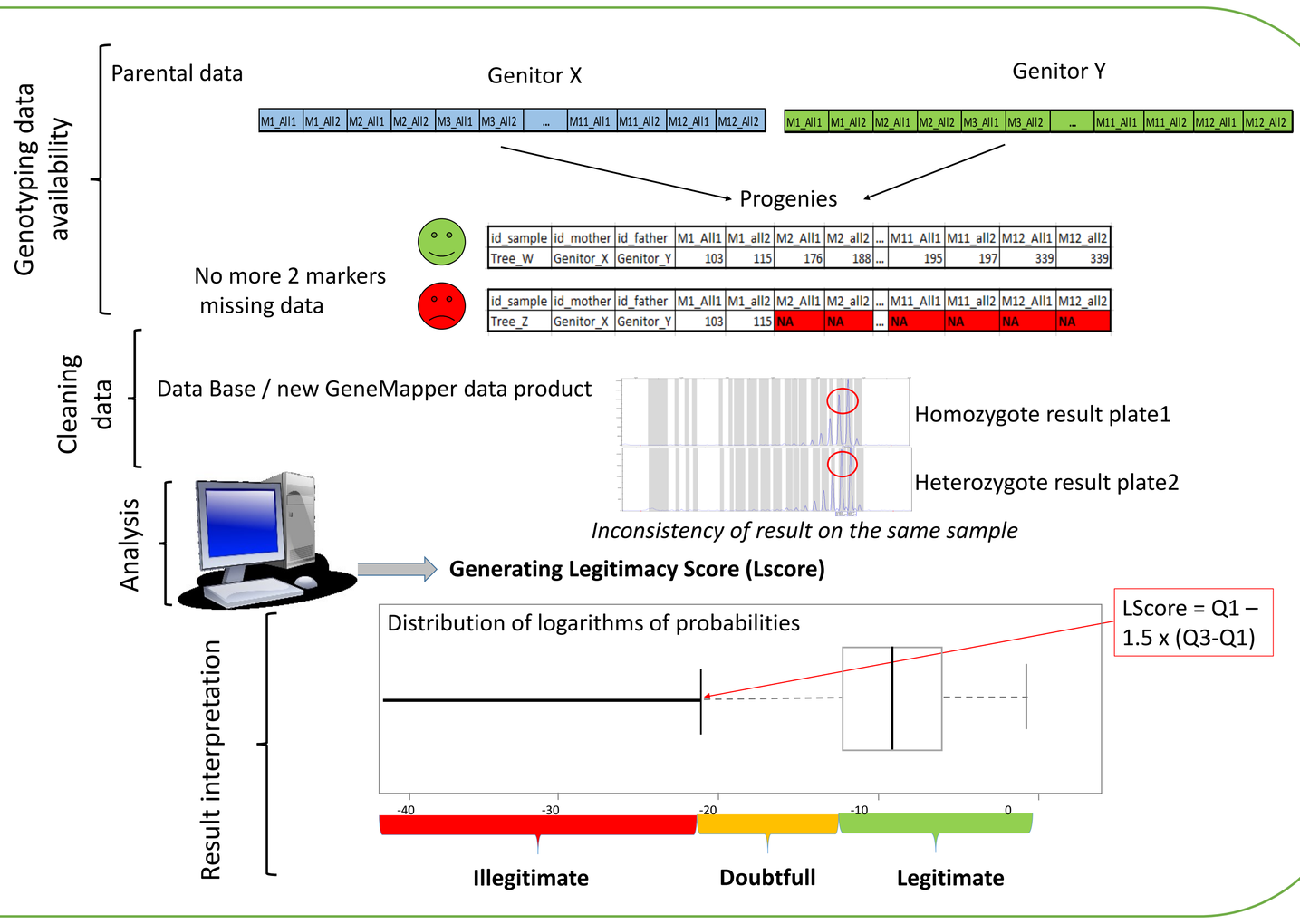


Control and data cleaning

- Quality controls of data to eliminate false illegitimates
- Missing data management

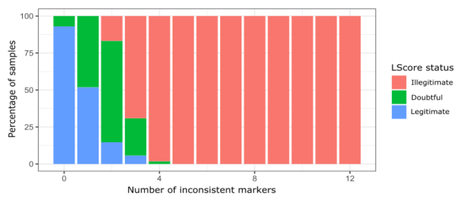
Analysis

- Probabilistic approach to calculate « legitimacy score »
- A defined threshold determines the level of sample legitimacy



Implementation

- 4 600 palms analyzed/year
- Illegitimate palm = more than 3 inconsistent markers



- 13 palms to test a progeny
- % of illegitimate + doubtful palms serve as indicator to ban a cross

Applications

- **Seed production**: parentage of palms, quality approach of planting material (60% of analysis)
- **Field trials**: quality data for breeding (40% of analysis)

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